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ABSTRACT

This bulletin, concerned mainly with the educational problems in developing lands, focuses on school development, the future of education, and the schools that will have to be built to meet the needs of the future. The report deals with problems arising from the present rates of dropout in traditional primary education, and proposes possible methods of changing education from the production of mainly unemployed persons and migrants into the creation of reasonably prosperous coworkers in the developing home society. (Author/MLF)

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school building in early development

part 1

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Introduction

The steady development of ideas regarding modern methods of education has naturally had a great impact on the design and construction of school buildings. So it is not surprising that these aspects of education are receiving more and more attention, although not so much perhaps as they deserve.
This survey, it is felt, might help to clarify the present situation and provide ideas which can be put to practical use.

The ICS and development. The work and function of the *Information Centre for School Building, ICS* were explained in some detail in the ICS-Bulletin 14/74 (International School Building News, Vol. 8/1974/no. 1 and which outlined its research, information, development and advisory work as well as its cooperation with other institutes.
This bulletin (Vol. 9/1975/no. 1) focuses on school development, the future of education, and the schools which will have to be built to meet the needs of the future.

The *ICS* is primarily occupied with two aspects of school building:

1. The establishing of accurate programmes of requirements; long-term programming as well as building programmes for immediate realization.

2. The development of suitable techno-economic production methods; long-term development as well as short-term improvements, including cost control.

These two aspects are interrelated. Requirements can be realistically formulated only within a framework of techno-economic possibilities, and any techno-economic development must focus on the functions which the endproduct is expected to fulfill.

Realizing this interdependence, the *ICS* has developed a school building philosophy which may be of interest not only to the school building authorities in the country where it originated – the Netherlands – but also to the school builders in other countries.
However great the differences may appear to be between different nations and the aspirations and developments of different populations, there are similarities, too, which warrant co-operation across the borders.

One of these similarities concerns the population's educational machinery, because it deals with basically similar units: the human beings who are born, grow up, act as mature members of the population and then pass away. The philosophy and psychology of education is applicable – if at all – to all of us. The school is an educational tool, the character of which may be universally expressed (compare Figure 1 on page 0).

We do not believe in the application of ready-made solutions – neither functionally nor technically – but rather in a well-developed methodology for the finding of solutions to basically identical problems under widely differing conditions.

On this basis three main points have been formulated:

1. School development is part of settlement development. The schools are important features of the settled society and should be planned and built as integrals

of the society as a whole.

2. The role of each school must be clearly defined, both as an instrument for producing individuals, who are capable members of a prospering nation, and as an enjoyable place for social integration. Those who are going to act in it should also be involved in the programming and the design of it.

3. There is a need for flexibility in the use of school premises (which may not even be needed for education of the future*). Special methods of achieving such flexibility, technically and economically, have been developed, and these may be translated into a building technology appropriate to the local conditions.

In this important field the *UNESCO* has organised several meetings of experts for the formulation of educational programmes for the *developing countries*. One of the most interesting of these was that held in Dakar from November 27th to December 4th, 1971, under the general sponsorship of the *UNESCO* and the special sponsorship of its *Regional Office for Education in Africa*.

During the discussions which, although centred on Africa applied with almost equal force to other developing countries, ranged over a wide field, the experts strongly criticised the present *conventional* approach to primary education in Africa south of the Sahara. Here are two of the main conclusions: (1) "With some approximations and without exaggeration it might be said that the school produces mainly unemployed persons and migrants." (2) "We need to seek deliberately an educational alternative."

But merely outlining the results of a faulty system is not sufficient; it is essential to put forward some practical remedies.

So agreeing with the basic conclusion that education must be based on population requirements for local development, we feel the *ICS* may be able to help in the renewal – or even the reformation – of our educational systems by adapting educational facilities to prevailing conditions.

Because the *ICS* believes in offering advice and help in the regions in which it is most urgently needed, this study deals mainly with the educational problems in developing lands, although it is obvious that in many cases it can apply with equal force to what is so often called Western education. Part 1 of this report deals with problems arising from the present rates of *drop-out* in traditional primary education, and proposes possible methods of changing education from the production of *mainly unemployed persons and migrants* into the creation of reasonably prosperous co-workers in the developing home-society.

This change-over should in the main be promoted by the *UNESCO*, although the *ICS* will help along the lines suggested in several *UNESCO* reports and projects.

Part 2 of the Report, to be published later in 1975, will deal with various phases and problems of *modern education* in the developing countries.

* see Part 2

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4. Modern education

1. School fundamentals

A school is a costly enterprise. Education must have a precise aim. Costs must be balanced against result. Especially in early development it is essential to analyse the school fundamentals before embarking on the educational programming.
Figure 1 illustrates what we mean by school fundamentals. We may first analyse *the stream* and then *the school.*

The stream. The basic feature of any school is the stream of human beings passing through it; a stream of individuals who will undergo a change by the activities which they join during their enrolment in the school. The first question – and the most universal one – for school construction is related to this change: Who is going to come into the school? What is he (or she) like when he comes in and what will he be like – or should he be like – when he goes out? What is the value added by his transformation in the school?

Second to this aspect of educational emphases comes the question of numbers of human beings to be transformed simultaneously.

How many are they, the ones who have the same input conditions and the same output expectations? This question – naturally – brings with it two more equally fundamental questions: When will they come and where will they come?

The time-factor involved in education is important. Each individual will be under the influence of the school during a certain number of years. How many? The *when?* which relates to the time of entry corresponds to another *when?* indicating the time of exit. The value added, related to the time in school, defines the efficiency of the educational enterprise.

The school. Looking at the school as a transformer of human beings from one stage of individual development to another stage, we should first of all concentrate on the software which transforms the individual.

The educational software is what remains with the individual after he has left school, the value-added to him by the educational process: knowledge know-how, behaviour and mentality. If the software is no good, the education will be no good. The choice of software is crucial. Each individual passing school is being transformed, from whom to whom?

Too little interest may have been devoted to this question in the past. This is where the differences come in; the differences between cultures, the differences between aims of life, realities of life; the differences between individuals, their aspirations, their future possibilities.

Only when knowing the software requirements does it make sense to study the machinery by which this software may be most efficiently transmitted. All schools, however, need principally the same transmitting machinery consisting of:

1. the instructors (teaching staff);
2. a hardware set up (books, audio-visual equipment, demonstration kits, furniture, etc.); and
3. the envelope around the activities of learning – that is, the school building and its surrounding premises.

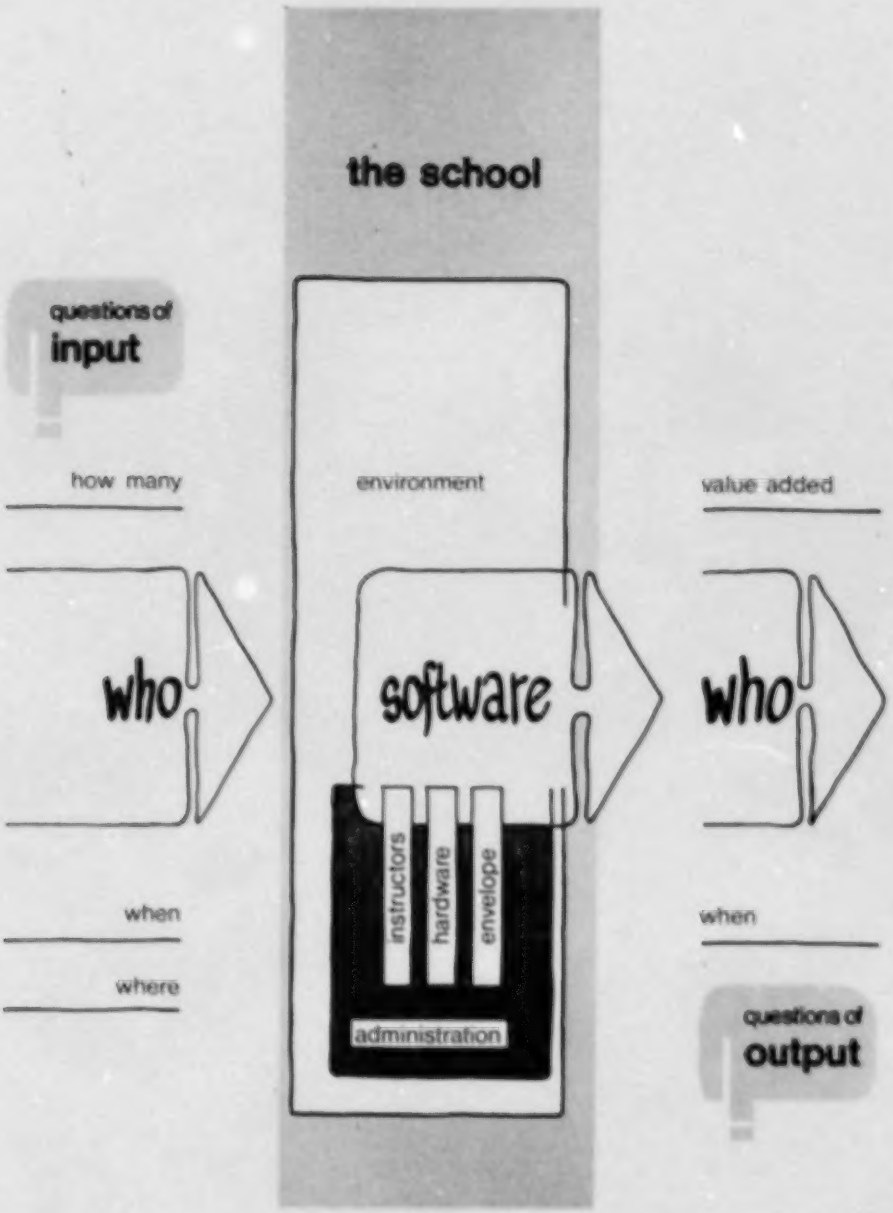


Figure 1. School fundamentals

These three components are basic. However, the whole machinery cannot function, without (4) a school administration. The administration, therefore, may be as fundamental as anyone of the three components mentioned above.

Finally, there is the total educational environment created as a function not only of the envelope but to a large extent also of the activities within it and the relationship between the school and society at large. This totality, however difficult to define, presses more and more for recognition as another specific fundamental.

2. Children in school

Enrolment planning. Let us take a look at the input problem of schools for children. Who are they? How many? When? Where?

This input problem may be studied nationally, regionally or locally.

School planning must be based on the population age group statistics. Of those children born in a certain year a certain – fairly well-known – number will reach the age of 6, and most of them will ask for primary school education in the neighbourhood of their place of birth.

By following the group born in 1970, for instance, the school planning authorities may foresee future needs for education on primary level (1976-1981) and secondary level (1982-1987). The most important factor will be the basic decision on possible (feasible) enrolment percentage in the different age groups.

"Developed" and "developing" societies. In a *fully-developed* society the enrolment problem is a quality problem rather than a quantitative one. The number of children asking for education in one year (age 6) may be only 220 per ten thousand active population (age 15-64). The adults may have no difficulty in keeping all children in school for nine years, half of them for another three years and ten percent of them for some three to five years in further education (e.g. university). The total number of students per ten thousand active population may be some 2,400 in the fully-developed society (Figure 2).

In a *rapidly developing* society the situation is different (Figure 3). The number

Figure 2. School enrolment in the fully developed society

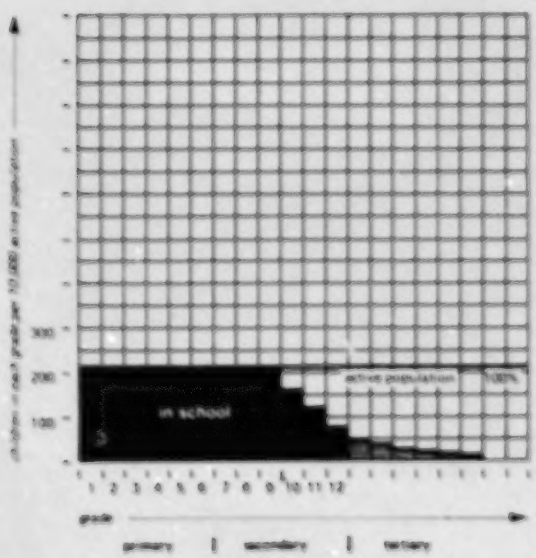
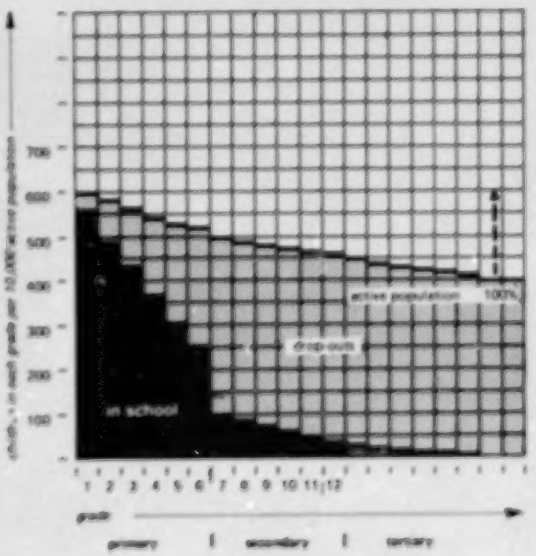


Figure 3. School enrolment in the "developing" society



of children born annually is rapidly growing and those asking for education in one year (age 6) may be 600* per ten thousand active population (age 15-64). The developing population faces a quantitative education problem which may not be possible to solve until family planning has stopped the ongoing population explosion. With four years primary school for everybody, ten thousand active population in a developing country would have to pay for 2,400 children in these four grades only – as many as ten thousand active population in a fully-developed society giving total support, university included.

If children in *developing* societies would be educated to the same extent as in fully-developed societies, then ten thousand active population would have to keep at least 5,500 pupils in class permanently. The educational budget would then have to be more than double that of the fully-developed society with the same active population.

It is this situation which creates the well-known *drop-out* problem in developing countries which cannot be solved within the framework of *conventional education* until the birth rates decrease to a level corresponding to the decreasing infant mortality.

The drop-out problem. Although eventual improvement in birth contro. may solve development problems in the future, it will not ease the educational burden of the developing societies of today. Their enrolment problems are enormous. And furthermore: the *developed* approach to a school programming does not apply.

We may look as an example at the development in India as described by the *Asian Regional Institute for School Building Research***, Table 1:

		1962	1981	
	Number per year	%	%	Number per year
Boys	410,000	40	40	810,000
Girls	590,000	63	62	1,260,000
All	**1,000,000**	**51**	**51**	**2,070,000**

Table 1. Number of children age 15 with less than 6 years in school in India.

The enrolment picture in the primary school of a *developing* society compared with the developed society may be as follows, Table 2 (compare Figures 2 and 3).

		%	%	%	%	%	%	%
developed	in class	220 100	219 100	219 100	218 100	217 100	217 100	216 100
developing	in class	364 94	405 85	431 76	367 67	309 59	263 48	190 39
	drop outs	36 9	67 15	136 24	191 33	234 41	284 51	400 80
		first grade	second grade	third grade	fourth grade	fifth grade	sixth grade	to lower secondary

Table 2. Children per ten thousand active population in primary school.***

* population census 1969 Zambia appr. 640
1969 Algeria appr. 610
1967 Tanzania appr. 570
1969 Kenya appr. 650

** Asian Regional Institute for School Building Research, "School Building Design Asia", Colombo - SRI Lanka, 1972

*** These figures are theoretical based on the Indian report und UN reports on death rates and birth rates. See U.N. Demographic Year Book 1970 and the basic U.N. report on demographic Methods *The Future Growth of World Population* ST/SOA/Series A 28 (1958).

Although the enrolment in the first year of lower secondary education in the *developing* society may be less than half of that in the developed society, the enrolment in the primary school (third year) of the *developing* society may be double that in the developed society. More children than those educated totally in the developed society may never reach grade five in the *developing* society. (These figures all refer to equal sizes of active population.)

The consequence

Modern education and intermediary education. It is becoming more and more obvious that the present educational programming in *developing* countries must not take the *developed* country as a model. A fact that must also be accepted is that until family planning becomes really effective a certain part of the population cannot be conventionally *fully educated*. This means that school programming will have to be divided into two parts:

1. the modern sector, and
2. the intermediary sector.

In the *modern sector* we may aim at 7-9 years school education for 50%; 10-12 years school education for 40%; further education for 10%.

The modern sector will supply workers for modern specialisation. The primary school education (6 years) in this sector will be a preparation of the children for their secondary vocational training and related theoretical studies. Problems arising in the development of a modern education may be partly the same as those which the developed countries have already experienced. However, this phase of the subject is so important that it will be discussed in detail in Part 2 of this Report to be published later.

In the *intermediary sector* children will enter life after a few years in school. How many children will have to be satisfied with this type of education and how should it be programmed? Certainly not as the conventional primary school. The problems of this sector will, therefore, have to be studied carefully.

3. Intermediary education

Quantification of intermediary education. The main question undoubtedly is: How many can be educated in this sector. This is, indeed, the crucial question particularly for primary school planning in a developing country, and the following is a logical answer:

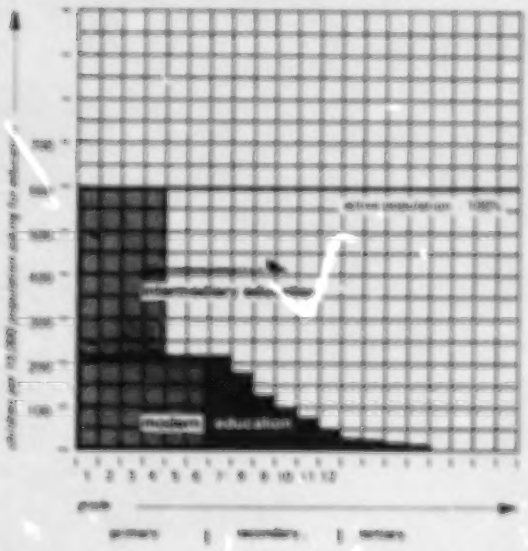
Our society wants to develop. When fully developed we will have to educate *all* our children in the modern sector. *All our children*, then, will be 220 in each age per ten thousand active population. So we must programme our modern education for this number. Therefore: Modern (conventional) primary schools will take in 220 per ten thousand active population every year and keep this number constant in all six grades.

The difference between the actual number of children age six and 220 per ten thousand active population is the number for which an *intermediary* education has to be planned.

Today, in an *average developing* society, this would mean (Figure 4) that:
37% (220) goes into *modern (conventional) education*
63% (380) goes into *intermediary education.*

The character of the intermediary education. Normal teachers, normal equipment and normal school building have to be produced for the modern sector. This is a problem in itself for the growing and developing society. We shall return to this problem, but we shall not forget that approximately two-thirds of all children have to be educated *for life* in less than six years. Their primary school will be the school

Figure 4. A solution to the drop out problem



of their life. And for this school there are no "normal" teachers; there is no "normal" equipment; there are no "normal" school buildings; and there is no "normal" curriculum.

It is not the task of the *ICS* to solve all the problems of education for the intermediary sector in developing societies, but we may help to solve some of them. The solution must be found without the "normal" teachers, without the "normal" equipment and without the "normal" buildings. And the aim of the teaching must be to produce good members of a society which cannot be a "normal" modern society.

No doubt the result of intermediary education must be traditional contentedness with an awareness of development possibilities based on existing local resources rather than a knowledge of foreign habits based on foreign resources.

Teaching (the software) must focus on local life under local conditions.

Teachers (the instructors) must be members of the local community.

Equipment (the hardware) should be developed for the purpose of the teaching and given to the teachers.

Schools (the envelope) cannot be built if the local people do not build them according to their local conditions (aided self-help).

The realization of intermediary education. The acceptance of intermediary education as an end in itself for those children who cannot reach modern secondary education must have an impact on the efforts and policies of school administrators. It is no longer their duty to build primary schools for all children. Schools must be built for 220 in each grade per ten thousand active population (age 15-64). For the rest, intermediary education must be planned and realized without conventional school buildings.

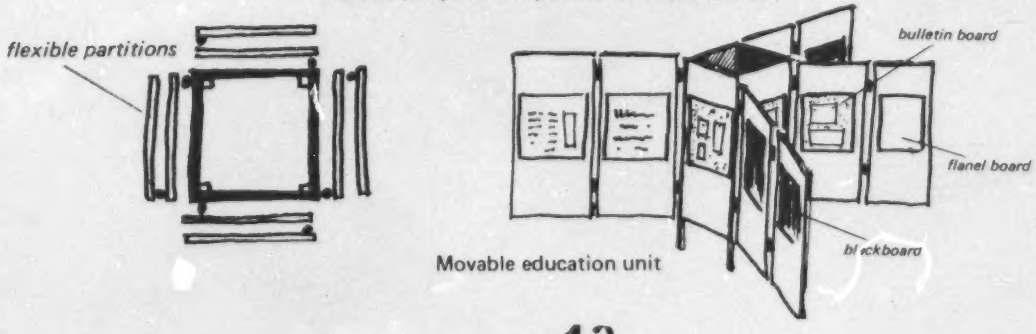
The first problem will be teaching the teachers, who must be members of the local community. Probably the envisaged education improvement must start with selected adult education in the communities, – thus not alienating the children from their parents by introducing *foreign* knowledge.

Three main results of this intermediary education are important:

1. The understanding that emigration from the home-region is no longer a solution for *better life*.
2. The feeling of self-reliance and the will to improve life *at home*.
3. The conviction that self-improvement does not need anything but the skill to read, the right books to study and the life itself with enough natural resources for its subsistence.

With these three main points in mind, the curriculum may be programmed for continuous self-improvement. The intermediary school may, by its own inherent forces, grow to a permanent school of life in the community where it started.

Movable education units may do the job. Carefully selected educational kits may be left with those of the adults who are proposed to act as teachers. They have to be supported by the community – not paid by the Government. Their school may be under a tree or in whatever locality the community decides to provide. The kit must be compiled and packed for that situation.

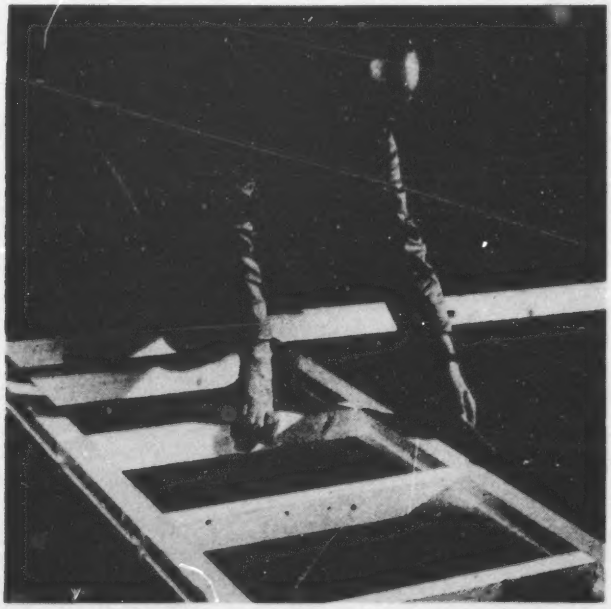


Movable education unit

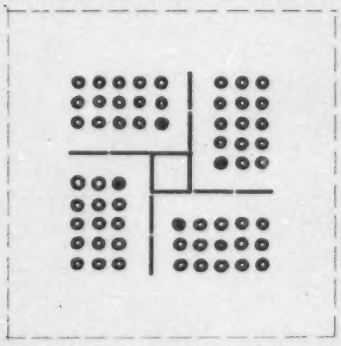
photographs Te Pas, Enschede

Simple construction
for educational unit

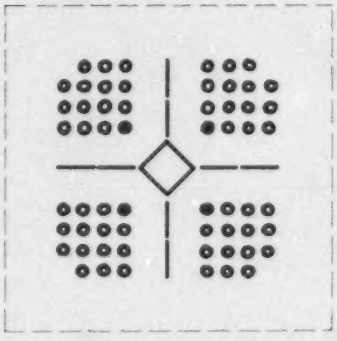
A blow with a hammer will do



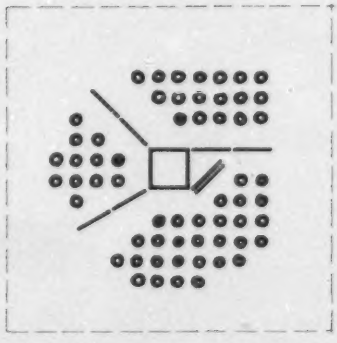
arrangement for same group sizes



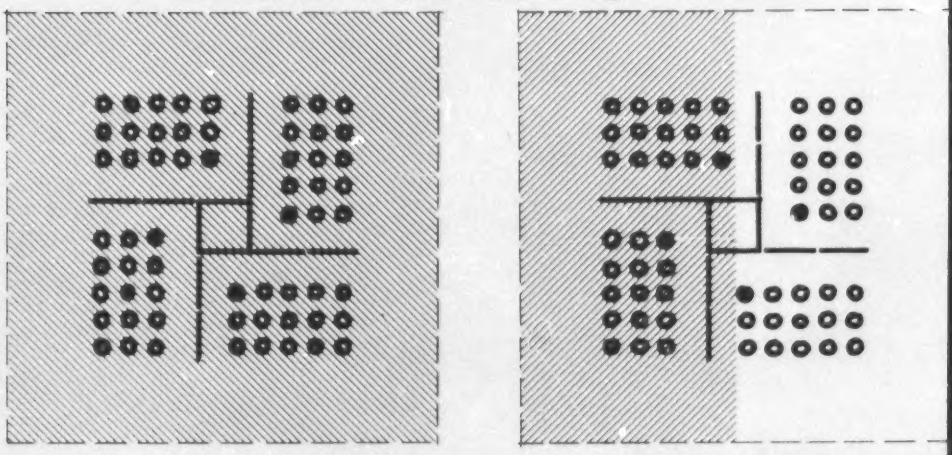
arrangement for same group sizes



arrangement for different group sizes



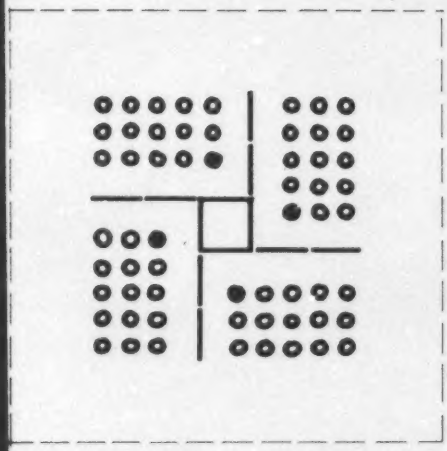
Educational unit is independent from building and can be used in:



covered area

partly covered area

partly covered area



open air

open air

The relationship between *intermediary* and *modern* education needs further study. It is of primary importance that these two sectors are not separated but that the door will remain open to higher education also for children who started in the intermediary school. And also *drop outs* from the modern school should as far as possible be brought into practival life through intermediary education. For the time being, however, the starting of the intermediary school on a broad base is most essential. The *Moya* initiative in Ethiopia may be studied as an example (Development Dialogue 1974 (No. 2) A Journal of International Development Cooperation Uppsala).

How to assist. The whole idea of intermediary education is based on the concept of self-reliance and self-centred development. The meeting of experts in Africa (1971)* strongly stressed the necessity of breaking the vicious circle of export-for-import development in African countries and embarking on self-centred national development programmes. Education then must produce members of a self-reliant society.

This does not mean that foreign development assistance should be rejected, but it

* see Introduction.

implies that assistance must support the new trend of national – and even local – self-help methods for development. This will apply to education and school building too.

The difficulty now seems to lie in organizing the links between central studies and local implementation.

No doubt central research both internationally and nationally is required to assist and guide the latent development forces in scattered communities. On the other hand, the activities needed for development, must be initiated and carried out locally by the people living in the developing communities.

A four-level organisation may have to build up assisting organisation focusing in this case on the teaching aids and adaptable equipment – a *hardware* suitable to the *software* really needed under prevailing local conditions.

The four levels may be characterized as follows:

1. International team. Co-ordinated multilateral and bilateral aid contributing theoretically and practically to the desired *self-reliant* and *self-centred* development. Development of models for simple and suitable equipment units, and building components which may be easily produced nationally or locally. Co-operation between experts on *software* for *self-centred* education and experts on design and production of equipment and buildings under self-help conditions.

2. National teams. To take over the results achieved by international co-operation and to further developed ideas for national practicability. These national teams must be linked to educational authorities, to financial authorities, and to authorities promoting local industrialisation and community development.

3. Regional links with a thorough knowledge of local conditions and with easy communication with the local populations for transmission of ideas, initiatives and possible assistance form the centre to the local population as well as the other way round; transmitting reactions, ideas and desires from the local people to the central organization.

4. Local action groups in the communities which will ultimately be responsible for making and implementing the intermediary educational programme for the local community. This responsibility includes school building and actual teaching by help of the *hardware* which, at least partly, may be delivered as *technical assistance*.

In this co-operation institutes from many countries may participate, both as members of international teams, co-operating with or guided by *UNESCO* and as advisors to the national teams.

The weak point to start with may not be so much in the central organization (internationally as well as nationally) for which money and initiative may be available and also expert institutes such as, for instance, the *ICS*. It may also not be in the local action groups if these are properly briefed and assisted people can afford and what they themselves desire.

The real obstacle in the organization may be the difficulty to find suitable persons for the link between the centre and the periphery. In many countries it may also take some time time before the conventionalists in the educational authorities accept the idea of intermediary education.

For the time being, therefore, the efforts should concentrate on those developing countries which ask for this solution to their educational difficulties.

But this again will, of course, mean that a careful study, followed by information campaigns, will be required to ensure that the developing countries which are ready for this new approach not only realise its great potentialities but also are prepared to introduce it along lines suited to their national and local conditions.